

REMARKS

Claims 1, 6 and 8 are amended. Claims 1-8 remain in the case.

Please enter the enclosed Substituted Specification. The Substituted Specification now includes the appropriate arrangement and headers. A hand-written, corrected copy of the specification is enclosed showing the changes which have been made to the specification as required by Section 608.01 (Q) and 714.20 (1) of the Manual of Patent Examining Procedure. The Substitute Specification filed herewith has been amended to utilize idiomatic English, correct minor typographical and grammatical errors and to conform the application to current United States Patent practice. The Substitute Specification includes no new subject matter; but does include the same changes handwritten in red in the attached, corrected, original specification. Entry of the Substitute Specification is respectfully requested.

Claim 8 was objected to under 37 CFR 1.75 (c) as being an improper multiple dependent claim. Both claims 6 and 8 have now been amended to eliminate the multiple dependencies.

Claim 7 and 8 were rejected under 35 USC 112, 2nd paragraph as being indefinite in failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. In particular the phrase "the contact area" in claims 7 and 8 had insufficient antecedent basis for this limitation in the claims.

Claim 6 has now been amended to require that the at least one shoulder is originally connected to the piston blank or to another shoulder forming a contact area. The contact area in claims 7 and 8 now have proper antecedent basis.

Claims 1 and 7 and 8 were rejected under 35 USC 102(a) as being anticipated by German Patent 15258956 to TRW. The Examiner alleges that TRW discloses a process for manufacturing a cooling channel piston which has a cooling channel 43 approximately in the area behind a ring the belt 115, wherein a piston blank is shaped at least partially in a forging process and at least one circumferential shoulder 26 is formed, behind the at least one shoulder a recess 29 is introduced and then the at least one shoulder is reshaped by means of deformation such that the recess is closed by the at least one shoulder to create the cooling channel.

It appears that the Examiner is referring essentially to Figure 5 of the TRW disclosure. In it, a group 29 is introduced from above into the piston blank 37. Afterwards a low melting metal ring (32), see Figure 4, is inserted into this groove 29. The upper area 24, 25 in Figure 5 is then

formed to seal the groove with the inserted metal ring 32. Metal ring 32 is necessary so that the piston crown 26 is now substantially deformed during the subsequent forming because of the narrow groove 29. (The piston crown is specifically intended to retain its cylindrical shape). In addition it is a disadvantage that the metal ring 32 has to be removed following the forming by heating the piston blank and melting the metal ring.

In contrast, the present application avoids these advantages by the shoulder being formed projecting laterally from the piston blank and the recess is introduced behind the shoulder from the side. Through this process, the shape of the piston crown can be retained during the forming of the laterally projecting shoulder and simultaneously the cavity can be created as a subsequent cooling channel. In addition, it is not necessary to insert a material into the recess that was introduced in order to obtain dimensional stability during the forming process.

Claims 1 and 7-8 were rejected under 35 USC 102(b) as being anticipated by German Patent 1210302. The Examiner alleges that regarding claim 1, German Patent '302 discloses a process for manufacturing a cooling channel piston (Figure 4) which has a cooling channel (H) approximately in the area behind a ring belt where a piston blank (Figure 6) is shaped at least partially in a forging process, and characterized in that at least one circumferential shoulder (E) is formed, behind the at least one shoulder a recess is introduced and then the at least one shoulder is reshaped by means of deformation such that the recess is closed by the at least one shoulder to create the cooling channel.

Claim 1 is now distinguished from the prior art. German Patent '302 does not show or disclose a circumferential shoulder that projects laterally from the piston blank to form the cooling channel. German Patent '302 forms its channel between the inner and outer shaft portions (D) and (E).

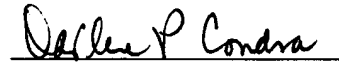
Claims 2-5 were rejected under 35 USC 103(a) as being unpatentable over either TRW or German '302 or the Mechanical Engineer's Handbook.

Claims 2-5 are dependent upon now allowable claim 1. Therefore, dependent claims 2-5 are also believed to be allowable. Claims 6-8 are also dependent upon allowable claim 1 and are also deemed to be allowable.

This amendment should place this case in condition for passing to issue. Such action is requested. If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact the Applicant's attorney at the telephone number listed below.

Respectfully submitted,

YOUNGBASILE



Darlene P. Condra
Attorney for Applicant(s)
Registration No. 37,113
(248) 649-3333

3001 West Big Beaver Rd., Suite 624
Troy, Michigan 48084-3107
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DPC/caw